

Assessing Coastal Wetlands Using a Systematic, Reference-Based Approach

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The U.S. Environmental Protection Agency (U.S. EPA)/Atlantic Ecology Division is working collaboratively with the U.S. EPA Region 1/Massachusetts Coastal Zone Management, the University of Rhode Island/Natural Resources Department, and Yale University/the School of Forestry and Environmental Studies to implement landscape and rapid assessments of coastal salt marshes in Rhode Island, Massachusetts, and Connecticut. Using a three-tiered approach, the coastal wetlands are assessed with (1) a landscape analysis (2) a field rapid method, and (3) a detailed field evaluation for some targeted sites. The landscape analysis (tier 1) uses National Wetland Inventory maps of intertidal, emergent, and associated wetlands, aerial photography, and a Geographic Information System to assess condition of the wetlands and disturbances (e.g., ditching, fragmentation) at a coarse scale. In the second assessment tier, the condition of the marsh is described through a field evaluation using measures of hydrology, plants, and soil. The plant metrics include descriptions of communities, species, and percent cover. Soil metrics include measures of penetration resistance and stable plant or peat fragment content in the surface layer of the soil. Area of disturbances such as tidal restrictions, outfalls, and invasive species are also observed on-site. In the final tier, detailed biological and geochemical measurements are made at a targeted subset of reference sites of low to high watershed disturbance as indicated by land use and nutrient inputs. Upon completion of the assessment, a reference-based evaluating scheme will be developed to describe the relative condition of the coastal wetlands.